Claims

1 (Currently Amended). A radio transceiver, comprising:

radio front end for receiving, amplifying and down-converting and filtering a radio frequency (RF) signal to produce a low frequency received signal;

analog-to-digital converter (ADC) operatively coupled to receive the low frequency received signal, the ADC producing an ingoing digital ~~low-frequency~~ signal based on the received RF signal;

baseband processor coupled to receive and process the ingoing digital ~~low-frequency~~ signal;

radar detection circuit coupled to receive the ingoing digital ~~low-frequency~~ signal, wherein the radar detection circuit further includes:

power detection circuitry that receives an ingoing digital signal and produces a power indication signal based on the ingoing digital signal;

magnitude adjustment block coupled to receive the power indication signal to produce a magnitude adjusted signal; and

a threshold comparison state machine that evaluates magnitude adjusted signal;

wherein the radar detection circuit:

detects incoming pulses and produces pulse data to a FIFO;

generates a table of pulse data for a series of pulses;

evaluates the pulse data within the table to remove pulse data for pulses that do not satisfy specified radar pulse characteristics;

groups a plurality of pulse data within the table into groups of a specified size;

performs radar detection processing; and

wherein the baseband processor inhibits ~~does not produce digital signals for~~ transmission of signals in overlapping frequency bands whenever a radar signal has been detected.

2 (Original). The radio transceiver of claim 1 wherein pulse data having a pulse width below a minimum pulse width is removed from the table.

3 (Original). The radio transceiver of claim 1 wherein pulse data having a pulse width above a maximum is removed from the table.

4 (Original). The radio transceiver of claim 1 wherein the radio transceiver suspends radar detection processing whenever a total number of pulses within the table is less than a specified number.

5 (Original). The radio transceiver of claim 4 wherein the specified number is equal to six.

6 (Original). The radio transceiver of claim 4 wherein the radio transceiver resumes processing whenever the total number of pulses is greater than or equal to the specified number.

7 (Original). The radio transceiver of claim 1 wherein the radar detection circuit measures signal magnitude crossings of a plurality of thresholds and determines a rise time from a first to a second threshold, time above the second threshold, and a fall time from the second to the first threshold.

8 (Previously Presented). The radio transceiver of claim 7 wherein the radar detection circuit monitors at least one of a magnitude, a pulse width and timing and timing relationships of received pulses to determine whether a radar signal has been received.

9 (Previously Presented). The radio transceiver of claim 8 wherein the radar detection circuit comprises a state machine for determining whether the received signal has a specified characteristic of a radar signal.

10 (Original). The radio transceiver of claim 8 wherein the radar detection circuit produces a control signal that is set to a specified logic state whenever the radar signal has been detected.

11 (Original). A radio transceiver, comprising:

radio front end for receiving, amplifying and down converting and filtering a radio frequency (RF) signal to produce a low frequency received signal;

analog to digital converter operatively coupled to receive the low frequency received signal, the ADC producing a digital low frequency signal;

baseband processor coupled to receive and process the digital low frequency signal;

radar detection circuit coupled to receive the digital low frequency signal, wherein the radar detection circuit further includes:

multiplication circuitry for receiving and squaring the digital low frequency signal;

moving average filter selectively coupled to receive an output signal produced by the multiplication circuitry, the moving average filter producing a moving average filtered signal;

first conversion block for converting a magnitude of the moving average filtered signal into decibel values; and

a threshold comparison state machine coupled to receive an output of the first conversion block in decibel values, wherein the threshold machine measures rise time, fall time, and magnitude levels of the output of the first conversion block and detects a

received radar pulse pattern and produces a corresponding control signal indicating whether a radar signal has been detected to the baseband processor; and wherein the processor is coupled to and receives rise time, fall time, and magnitude levels of received signals from the threshold comparison state machine, and

wherein the processor determines whether the radar signal has been received and, if so, inhibits transmissions on overlapping frequency bands;

wherein the radar detection circuit:

detects incoming pulses and produces pulse data to a FIFO;

generates a table of pulse data for a series of pulses;

evaluates the pulse data within the table to remove pulse data that does not satisfy radar pulse characteristics;

groups a plurality of pulse data within the table into groups of a specified size;

performs radar detection processing; and

wherein the radar detection circuit counts and determines a number of most common pulse interval values and determines a radar signal is present if the number of most common pulse interval values is greater than or equal to a specified number.

12 (Previously Presented). The radio transceiver of claim 11 wherein the radar detection circuit examines pulse data within the table of pulse data to determine a radar signal is present with a missing pulse.

13 (Previously Presented). The radio transceiver of claim 11 wherein the radar detection circuit examines pulse data within the table of pulse data to determine a radar signal is present with an extra pulse.

14 (Previously Presented). The radio transceiver of claim 11 wherein the radio transceiver suspends transmissions in overlapping frequency bands.

15 (Previously Presented). The radio transceiver of claim 14 wherein the radio transceiver classifies the detected radar signal by comparing frequencies of pulses to known radar signals.

16 (Previously Presented). The radio transceiver of claim 14 wherein the radar detection circuit continues to monitor for radar and, once the radar signal is determined to not be present, resumes transmission in overlapping frequency bands.

17 (Currently Amended). An integrated circuit radio transceiver, comprising:

radio front end for receiving, amplifying and down converting and filtering a radio frequency (RF) signal to produce a low frequency received signal;

analog to digital converter operatively coupled to receive the low frequency received signal, the ADC producing a digital low frequency signal;

baseband processor coupled to receive and process the digital low frequency signal;

radar detection circuit coupled to receive the digital low frequency signal, wherein the radar detection circuit further includes a threshold comparison state machine for measuring rise time, fall time, and magnitude levels of received signals;

wherein the radar detection circuit:

detects incoming pulses and produces pulse data to a FIFO;

generates a table of pulse data for a series of pulses;

evaluates the pulse data within the table to remove pulse data that does not satisfy radar pulse characteristics;

groups a plurality of pulse data within the table into groups of a specified size;

wherein the radar detection circuit counts and determines a number of most common pulse interval values and determines a radar pulse is present if the number of most common pulse interval values is greater than or equal to a specified number; and

wherein the baseband processor is coupled to and receives rise time, fall time, and magnitude levels of received signals from the threshold comparison state machine, and determines whether the radar signal has been received and, if so, inhibits transmissions on overlapping frequency bands.

18 (Previously Presented). The radio transceiver of claim 17 wherein the radar detection circuit examines pulse data within the table of pulse data to determine a radar signal is present with a missing pulse.

19 (Previously Presented). The radio transceiver of claim 18 wherein the radar detection circuit counts and determines a number of most common and second most common pulse interval values and determines a radar signal is present if the number of most common pulse interval values is equal to 2 times the number of the second most common pulse interval values.

20 (Previously Presented). The radio transceiver of claim 18 wherein the radar detection circuit counts and determines a number of most common and second most common pulse interval values and determines a radar signal is present if 2 times the number of most common pulse interval values is equal to the number of the second most common pulse interval values.

21 (Previously Presented). The radio transceiver of claim 18 wherein the radar detection circuit counts and determines a number of most common and second most common pulse interval values and determines a radar signal is present if the number of most common pulse

interval values summed with the number of the second most common pulse interval values is greater than the specified number.

22 (Previously Presented). The radio transceiver of claim 17 wherein the radar detection circuit examines pulse data within the table of pulse data to determine a radar signal is present with an extra pulse.

23 (Original). The radio transceiver of claim 22 wherein, for the grouped plurality of pulse data entries, the radio transceiver generates a second list of pulse repetition intervals by subtracting a start time for a given pulse from a start time for a pulse preceding an immediately preceding pulse.

24 (Original). The radio transceiver of claim 23 wherein the radio transceiver compares pulse intervals of the first list of pulse repetition intervals with the second list of pulse repetition intervals.

25 (Previously Presented). The radio transceiver of claim 24 wherein the radio transceiver determines a radar signal is present if pulse periods match from the comparison, and if the total number of pulses in second list of pulse repetition intervals is greater than a specified number.

26 (Currently Amended). A method in a radio transceiver, comprising:

receiving, in an integrated circuit radio transceiver, an ingoing radio frequency signal;

generating, in transceiver front end circuitry, an ingoing digital signal based on the ingoing radio frequency signal;

generating a power indication of the ingoing digital signal and adjusting a magnitude of the power indication;

grouping a plurality of pulse data entries detected in the ingoing digital signal based on the magnitude adjusted power indications;

generating a first list of pulse repetition intervals having pulses with a pulse width within a specified range;

counting a number of most and second most common pulse interval values;

determining whether a radar signal is present; and

if a radar signal is present, inhibiting transmission of outgoing communication signals from the radio transceiver in overlapping frequency bands of the radar signal.

27 (Original). The method of claim 26 further including determining whether the number of the most common pulse interval values exceeds a specified value.

28 (Previously Presented). The method of claim of claim 26 further including determining a radar signal is present having an extra pulse.

29 (Previously Presented). The method of claim 26 further including continuing to monitor for radar signals even after a radar signal has been detected to determine whether transmissions may resume in overlapping frequency bands.